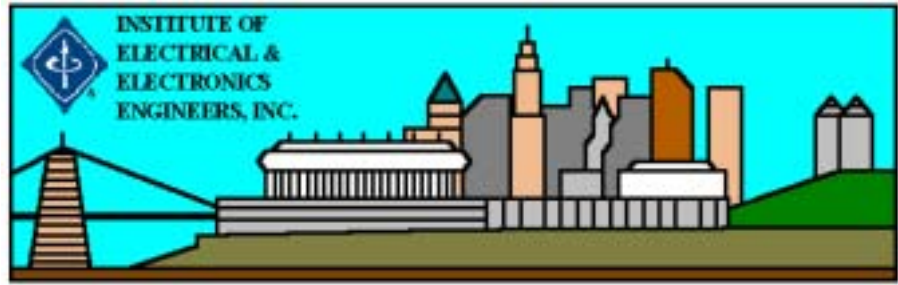


IEEE CINCINNATI SECTION NEWSLETTER MARCH 2002



CHAIR'S MESSAGE

by Tom Grau, Section Chair

On Wednesday, February 20, 2002, the Cincinnati Section met at the Harris Corporation in Mason, OH, where Geoffrey Mendenhall discussed the Harris Corporation, Communications Division's role in the HDTV market and the changes that are taking place in the TV business. Also included was Harris Corporation's response to the events of September 11, 2001 in which five NYC television transmitters and fourteen FM transmitters were destroyed. What was truly remarkable was that with the help of Harris resources, one of the TV stations was back on the air the next day and two more became operational on the second day. An example of real team work. The meeting was well attended and on behalf of the Cincinnati Section, I offer our thanks for a job well done by the members of the Harris team.

Allow me to again state the Executive Committee's mission and vision.

Our Mission:

To serve the membership of this Section and to support the Societies that our members belong to.

Our Vision:

To enrich our member skills through program presentations of current technologies and issues.

The Executive Committee is now establishing our schedule for the late spring and fall dates and would appreciate any suggestions of topics to pursue. Please contact Tom Grau

TO SUBSCRIBE TO THE ELECTRONIC NEWSLETTER

This newsletter is only available via e-mail or the Section's web page at <http://ieee.cincinnati.fuse.net/> with the exception of new Section members (one issue only) or members who have specifically requested a copy be delivered through the U. S. Mail.

If you are a new Section member and would like to get this newsletter electronically, please contact Bob Morrison (Editor) at **513-287-3697** or by e-mail at j.r.morrison@ieee.org. Provide your name and member number. In case there are questions, please include a daytime telephone number as well.

If you would like the "Snail Mail" version, you must contact Bob Morrison via the above means or call the Section's voice mail at **513-629-9380**.

NEW MEMBERS

The following individuals are IEEE members who are new to our Section:

PN V. ANAND	FRANK E. HAY	DAVID L. RENSHAW
PHILIPPE DEBRAY	APOORVA HEMANI	JEFFERY E. RUFFNER
SCOTT E. DRAKE	IVAN E. HERNANDEZ	MICHAEL A. SCHOENBERGER
JOYCE A. ESTERMAN	GEORGE KELLEY, PH.D.	ANN E. KELLEY SOBEL
CHRISTOPHER S. GRUBER	NAGENDRA MARUPAKA	FOSTER B. STULEN
JAMES D. HARRISON, JR	ELDON L. MATHES	RYAN B. WANTZ
EARL C. HART	TOM R. MONGOLD	

We wish to extend our welcome to all of our Section's new members!!!

ATTENTION Retired Engineers and Scientists! Consider RESC Activities !

The **Retired Engineers and Scientists of Cincinnati - RESC** for short - invite those with **technical backgrounds** who are **retired** and would like to **share good fellowship** while **pursuing interests** in technology, community, history and nostalgia, travel, and business or industry developments.

Activities include monthly **luncheon meetings**, periodic **plant tours**, and **golf** in season. Luncheon meetings are held on the third Tuesday of each month from October through May.

Visit website <http://RESC-online.org> for the "big picture" of RESC

RESERVATIONS REQUIRED FOR ALL EVENTS - Contact **Gene Anderson**, phone **(513) 353-2708**

LUNCHEON MEETING SCHEDULE -

MARCH LUNCHEON MEETING

Tuesday, March 19
11:30 AM

Restoring a Frozen "My Gal Sal" B-17 Bomber

Bill Beringhaus, RESC member, retired Principal Electrical Engineer, CG&E, who piloted a B-17 on 35 WW2 missions over Europe, will describe the efforts of a local team to restore a crashed B-17 after its 56 years in the icy waters of Greenland, for its use as a memorial.

Tuesday, April 16
11:30 AM

South American Odyssey

Art & Ruth Kupferle, the husband/wife team of a retired Bell System Engineer (past Pres. of RESC) and a retired Cincinnati school teacher, who have addressed RESC previously about their visits to many parts of the globe will describe the places, people, and history of the larger South American countries

Tuesday, May 21
11:30 AM

88 Bells for Ohio Bicentennial (NOTE: AT QUALITY CENTRAL HOTEL, NORWOOD)

James Verdin, President, Verdin Bell Co. will describe how between now and 2003 his company will cast on location, by use of a unique mobile foundry in each of the 88 counties, a 230 pound bell bearing the name of the county, the casting date, the Great Seal of Ohio, and the Bicentennial logo.

PLANT TOUR SCHEDULE

Tours are limited to RESC Members and Member sponsored Guests

Tuesday, March 26 **MILACRON - PLASTIC TECHNOLOGIES GROUP**, Batavia, Ohio
Tuesday, April 23 **MAZAK (Manufacturer of Machining Centers)**, Florence, Kentucky
Thursday, May 16 **TOYOTA AUTO ASSEMBLY PLANT**, Georgetown, Kentucky

General information about RESC and supplemental information about events
is available on website: <http://RESC-online.org>

Scanning the Past: A History of Electrical Engineering from the Past

Submitted by Dick Reiman, Historian

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Michael I. Pupin

The first issue of the PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS (IRE) was published 80 years ago this month. Michael I. Pupin, a professor of electromechanics at Columbia University, authored the first paper in this first issue, a paper that discussed how to determine the radiation resistance of an antenna. A Serbian immigrant, Pupin already had achieved exceptional economic success as an inventor, and was the mentor of such pioneers in radio as Alfred N. Goldsmith and Edwin H. Armstrong.

In his paper, Pupin stated that there were two ways to determine radiation resistance: through the use of mathematical analysis or by experiment. He noted that it was "extremely difficult" to obtain a solution of the radiation law of a complex antenna using electromagnetic theory. As an alternative, he suggested an experimental method similar to that which he had used in measurements of alternating current circuits. His method employed a version of the Wheatstone Bridge, which he believed would give a fairly accurate value for radiation resistance if it was large compared to other resistances in the coupling circuit between the source and the antenna. Alfred Goldsmith commented that the Pupin paper provided a good example of the transfer of ideas from one field of research to another.

Pupin was born in 1858 in the small village of Idvor, which later became part of Yugoslavia. His early education was in Idvor and a nearby town, and he worked in summers as a herdsman. In 1873, he was sent to Prague to continue his education, but he left for America in 1874 soon after the death of his father. He arrived almost penniless and did farm work and then worked in a cracker factory while learning English and taking advantage of access to the Cooper Union Library in New York City. In 1879, Pupin enrolled at Columbia University, from which he graduated in 1883, becoming a U.S. citizen the same year.

Pupin received graduate fellowships that enabled him to study at Cambridge University in England and at the University of Berlin in Germany, where his teachers included Hermann von Helmholtz and Gustav Kirchhoff. He received his doctorate at Berlin in 1889 and then returned to Columbia, where he taught in the Electrical Engineering Department until his retirement in 1931. He did research on electrical power apparatus and X-ray tubes during the 1890s. In 1900 he obtained patents on loading coils for the improvement of telephone communication, and sold the U.S. rights to the American Telephone and Telegraph Co. for \$455,000. He also sold the European rights to the invention to the German firm, Siemens and Halske. He received 34 patents in all, several of the later ones being in the field of radio.

Pupin was an active member of both the IRE and the American Institute of Electrical Engineers (AIEE), serving as President of the IRE in 1917 and as President of the AIEE in 1925. He received the Edison Medal of the

AIEE in 1920 and the IRE Medal of Honor in 1924. His popular autobiography, *From Immigrant to Inventor*, received the Pulitzer Prize in 1924. He also wrote *The New Reformation* (1927) and *Romance of the Machine* (1930), as well as many technical papers. He died in New York City in 1935.

James E. Brittain
School of History, Technology, and Society Georgia Institute of Technology

ELECTRICAL WORLD MAGAZINE **125th ANNIVERSARY**

by Bob Morrison, Editor

In 1999, Electrical World Magazine celebrated their 125th anniversary as one of the premier publications for the Electric Power Industry. They presented a history of significant People, Companies, Industry Changes and Innovative Technologies which have served to define the current status of the Electric Power Industry. In the next few months, their article will be reprinted in this newsletter (*permission granted by McGraw-Hill Publishing Co.*)

COMPANIES

Throughout the history of the power industry, companies and corporations have fostered amazing technological creations while revolutionizing society. Here are nine companies that have helped shape the industry, and to some degree, the world.

Babcock & Wilcox Co., Barberton, Ohio

U.S. Patent No. 65,042 paved the way for modern electric generation. In fact, Thomas Edison hailed it as "the best boiler God has permitted man yet to make." What was it? It was Babcock & Wilcox Co's watertube boiler, the basic tool in the production of electricity, and the first of its kind to be inherently safe. At the turn of the century,



Babcock & Wilcox was the world's leading boiler producer -- even powering New York City's first subway in 1902.

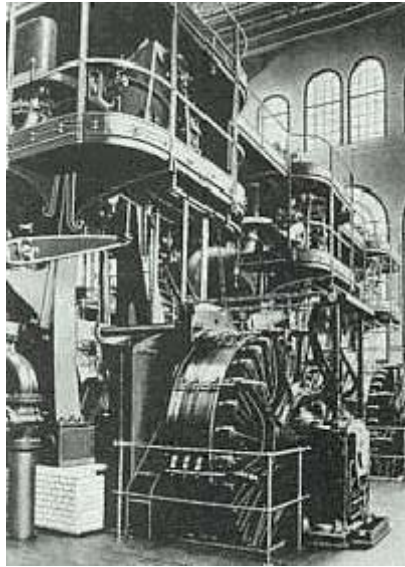
Some 132 years after George Herman Babcock and Stephen Wilcox patented their invention, Babcock & Wilcox boilers still account for a significant percentage of the world's electricity supply.

Siemens AG Erlangen, Germany

In the late 19th century, before most residents brought the luxury of electricity into their homes, the German engineering firm of Siemens & Halske AG was already thinking of electrical appliances, such as hot-air

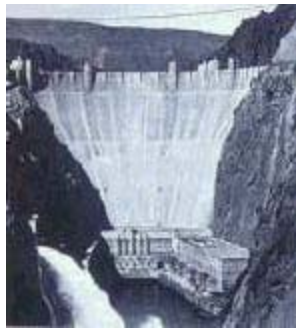
showers and power washers. The company was established as an electrical pioneer having installed China's first electrical generator in Shanghai in 1879, and built the world's first electric railway, elevator, and streetcar.

Siemens's reputation also included the creation of the electric dynamo -- the dc generator popular in that era. Today, Siemens remains a global technology leader in electric power generation, transmission, distribution, and systems control.



The Bechtel Group, San Francisco, Calif

As the head of the six-company conglomerate that built Hoover Dam -- one of the great engineering feats of the 20th century -- Bechtel secured its place in history as a world-class contributor to the rapid growth of the electric power industry. As the industry matured, Bechtel continued to develop many milestone projects. For example, the Atomic Energy Commission contracted with Bechtel to build the world's first fast breeder reactor -- the Experimental Breeder Reactor-1. The success of EBR-1 led to the construction of the Dresden nuclear plant. The company's effort established nuclear power as a feasible commercial option. Bechtel was also called in for remediation work after the Three Mile Island nuclear accident, and was a major player in the reconstruction of Middle East power infrastructure after the Gulf War.



Westinghouse Electric Corp., Pittsburgh, Pa

George Westinghouse founded the Westinghouse Electric Corp with the plan of providing "fuel, services, technology, and equipment to utility and industrial customers in the worldwide commercial market." Since 1886, the company -- today subsidiaries of Siemens, ABB, and other firms -- stayed focused on its founder's goals. In its more than 100-year history, Westinghouse achieved several industry firsts, including the development of the steam turbine/generator, the ac motor and ac electric meter, and the original American designed and built jet engine.

Additionally, Westinghouse was responsible for the first completely electrified home built in Mansfield, Ohio, and in 1943, the first volume production of pure uranium.

Detroit Edison Co., Detroit, Mich

Reportedly the first utility to operate its own engineering research facility, Detroit Edison became a technology champion and an aggressive business aggregator. One of its largest predecessors -- the Edison Illuminating Co of Detroit -- was launched in 1886 to supply alternating current for incandescent lighting for homes and offices. In 1891, another forebear, Peninsular Electric Light Co, capitalized on the dc market by purchasing the local Brush Electric Light Co to operate the city's 142 dc-powered lights. By 1903, Detroit Edison was formed, and for the next half century the company focused on expanding its power generation base.

In 1921, the company named Sarah Sheridan vice president of sales. An early proponent of customer service, Sheridan's strategies included distributing free replacement bulbs, providing service guarantees, and launching an appliance line known as Electrochef stoves.

IEEE NEWS

IEEE-USA SUPPORTED THE CYBER SECURITY RESEARCH AND DEVELOPMENT ACT, PASSES OVERWHELMINGLY IN THE U.S. HOUSE OF REPRESENTATIVES

WASHINGTON (February 7, 2002) - In its continuing efforts to protect our nation from cyber terrorism, IEEE-USA supported the Cyber Security Research and Development Act (H.R. 3394), which passed in the U.S. House of Representatives today on a vote of 400 to 12.

The five-year, \$887.85 million bill would create new research and education programs at the National Science Foundation (NSF) and the National Institute of Standards and Technology (NIST). These programs are designed to address the nation's extraordinary vulnerability to attacks upon computer systems and networks, and the critical national infrastructures that rely upon them (e.g., water systems and electricity grids).

The bill was introduced by House Science Committee Chairman Sherwood Boehlert (R-NY) and Ranking Member Ralph M. Hall (D-TX) and has the support of the White House.

"We commend Chairman Boehlert and Ranking Member Hall for shining a spotlight on the shocking level of vulnerability to our vital information infrastructure," IEEE-USA President LeEarl Bryant said. "IEEE-USA stands ready and willing to help advance H.R. 3394 in the Senate."

The proposed legislation is designed to promote more innovative research in cyber security and to attract more senior researchers and students into the field. This will help address the inadequate protection current technology offers, and provide more research and development into better security for computer systems and networks that protect critical aspects of daily life.

"IEEE-USA is pleased to support this bill, which will pay dividends not only for protection against cyber terrorism, but also for commerce and personal privacy," said IEEE-USA Research and Development Policy Committee Chair Ron Hira at a Capitol Hill press conference organized by Rep. Boehlert.

MICHIGAN SCHOOL WINS IEEE-USA BEST COMMUNICATIONS SYSTEM AWARD - PLACES SECOND OVERALL AT NATIONAL ENGINEERS WEEK FUTURE CITY COMPETITION

WASHINGTON (February 20, 2002) - St. John Lutheran School of Rochester, Mich., won the second IEEE-USA Best Communications System Award and placed second overall at the national finals of the National Engineers Week Future City Competition on Wednesday.

The honor, one of 19 special awards presented at the Hyatt Regency Hotel-Capitol Hill, was for the most "efficient and accurate communications system." Stephanie Rink, Nada Zohdy and Sue Yang, all 13 years old, made up the team with St. John's teacher Jonathan Pfund and General Motors engineer Jane Sternemann.

IEEE-USA President LeEarl Bryant presented each team member with a plaque and \$100 U.S. Savings Bond. The school's technology fund receives \$2,000 for its national finish.

St. John's city, Robust in Sitnalta, is set in the year 2150. The city's communications system has three major elements for each citizen: a contact lens that projects images onto an air-based personal computer screen; a back-tooth mini microphone that converts mouth movements into sound; and a glove for deaf people so that sign language can be converted to sound. Each person has the ability to send and receive voice, data and video.

"They had a well thought-out system," said Lowell Smith, who served as a judge with fellow U.S. IEEE member Janet Hill. "They used technology that we've yet to fully explore. I especially liked their smart-language converter and ability to communicate with the deaf."

St. John, which won the Michigan regional competition last month, advanced to the national finals for the second consecutive year with the same three students. It also received two other special awards Wednesday.

The Future City Competition, which IEEE-USA introduced in 1993, is designed to encourage the future generation of engineers. Seventh and eighth grade students create their own vision of a city of tomorrow, working first on computer and then constructing three-dimensional scale models. About 30,000 students competed this past year. Visit www.futurecity.org.

IEEE EAB TEACHER IN SERVICE PROGRAM TRAINING WORKSHOP ONLINE FOR ENGINEERS WEEK

IEEE Section training for the IEEE Educational Activities Board (EAB) Teacher In-Service Program is now available online at www.ieee.org/eab/precollege/tispt/index.htm. The program features engineers designing and presenting technologically oriented subject matter to the Sections' local teachers. Sections can have enormous impact in their hometowns by providing engineering projects for teachers to use. One high school teacher, for instance, over the course of a year can influence over 125 students. Fourteen Sections, from Regions 1-8, have already been trained using these Workshop materials.

The site documentation is based on two in-person Workshops conducted in 2001 by Douglas Gorham, EAB Pre-College Education Manager. Volunteers trained at the Workshops are called "champions" of the program. They take the lead in implementing the Teachers' Workshops in their Section.

Diane Collier, an In-Service "champion" from the Fort Worth, Texas (USA) Section who attended one of the in-person sessions, commented about the new site, "I have a contact at the Galveston, Texas Section that is interested in the program. This will be excellent for explaining getting started to him."

The online workshop is complete with instructions on how to develop and implement a pre-college teacher-training program. Included are suggestions on how to identify and reach school officials; include the sessions in a teacher's professional development; and ensure that project ideas conform to applicable standards.

The presentations feature hands-on activities that will allow teachers to take the activities and concepts back to the classroom and teach it with assurance. At present there are a list of topics and two flyers that the Florida West Coast Section used to entice teachers to the In-Service Workshop posted at the website. As each Section reports on their teacher workshops, the new topics will be posted. The topics and flyers can serve as examples for further discussion by the Section volunteers.

Over 160 teachers in Florida have attended the sessions designed by the Florida West Coast and Miami Sections. Their response has been enthusiastic and gratifying, with feedback comments ranging from "We need to do more of these programs" to "Now we know where the resources are ? IEEE!"

For further information contact Douglas Gorham, at d.g.gorham@ieee.org.

IEEE-USA PRESIDENT SPEAKS ON TECHNOLOGICAL LITERACY AT SPACECOMM 2002
WASHINGTON (February 25, 2002) - IEEE-USA President LeEarl Bryant appeared at SpaceComm 2002 as a panelist last week in Colorado Springs, Colo. She discussed precollege education initiatives designed to increase technical literacy of the general population.

The theme of SpaceComm 2002 was "Shaping Information Operations and Space Leadership." The conference focused on the relevance of current policy, operations and execution of space and information operations.

Bryant spoke on the Education Panel: "Essential Global Technical Expertise - Investing in our Government and Industry People." Brig. Gen. David A. Wagie, dean of faculty at the United States Air Force Academy, chaired the panel.

The Rocky Mountain Chapter of the Armed Forces Communications and Electronics Association hosted SpaceComm 2002, in partnership with the U.S. Space Command. The AFCEA (www.afcea.org) is a worldwide, non-profit organization of military and civilian members in the command, control, communications, computers and intelligence fields.

The IEEE Cincinnati Section Executive Committee

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